

# **Data Migration Service for HP StorageWorks MPX200**

Planning Guide

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## Notes

# Preface

The *Data Migration Service for HP StorageWorks MPX200 Planning Guide* provides end-to-end “best practices” for using HP StorageWorks MPX200 data migration service. MPX200-based data migration service migrates the data at *block level*. Successful data migration means the application is able to access the same data after the data is migrated to a new logical unit number (LUN). Proper planning for data migration reduces downtime and creates first-pass success.

## Intended Audience

This guide is intended for administrators planning to implement data migration projects. The administrator should be familiar with SAN and storage management.

## Related Materials

For more information, refer to the *Data Migration Service for HP StorageWorks MPX200 User's Guide*.

## What's in This Guide

This preface provides a general overview of data migration service and covers the intended audience, related materials, document conventions, and contact information for technical support.

The remainder of this guide is organized into the following chapters and appendices:

- [Chapter 1 Getting Started](#) defines some data migration terms, provides basic understanding of the planning process, and helps you to associate the new data LUN (destination LUN) back to the application.
- [Chapter 2 Inventory Checklists](#) outlines the details you must incorporate for data migration planning.
- [Chapter 3 Performance and Downtime](#) describes methods for optimizing data migration performance and minimizing downtime using the MPX200.
- [Chapter 4 Operating Systems Dependencies](#) provides some specific information on operating system dependencies.

- [Appendix A Checklist Examples](#) provides some examples of completed data migration checklists.
- [Appendix B Assigning LUNs to the MPX200 for Data Migration](#) provides specific steps for data migration using various storage array management tools.

In addition, following the appendices is an index to help you quickly locate the information you need.

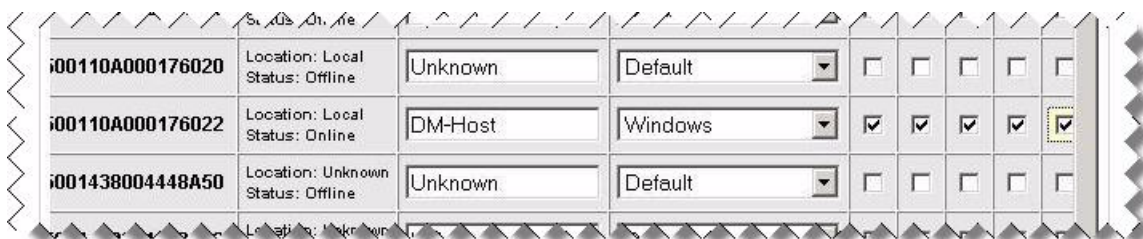
## Documentation Conventions

This guide uses the following documentation conventions:

- **NOTE:** provides additional information.
- **CAUTION!** indicates the presence of a hazard that has the potential of causing damage to data or equipment.
- Text in [blue](#) font indicates a hyperlink (jump) to a figure, table, or section in this guide. Links to Web sites are shown in [underlined blue](#). For example:
  - ❑ [Table 9-2](#) lists problems related to the user interface and remote agent.
  - ❑ See [“Installation Checklist” on page 3-6](#).
  - ❑ For more information, visit [www.qlogic.com](http://www.qlogic.com).
- Text in **bold** font indicates user interface elements such as a menu items, buttons, check boxes, or column headings. For example:
  - ❑ Click the **Start** button, point to **Programs**, point to **Accessories**, and then click **Command Prompt**.
  - ❑ Under **Notification Options**, select the **Warning Alarms** check box.
- Text in `Courier` font indicates a file name, directory path, or command line text. For example:
  - ❑ To return to the root directory from anywhere in the file structure:  
Type `cd /root`, and then press ENTER.
  - ❑ Enter the following command: `sh ./install.bin`
- Key names and key strokes are indicated with UPPERCASE:
  - ❑ Press CTRL+P.
  - ❑ Press the UP ARROW key.



- Text in *italics* indicates terms, emphasis, variables, or document titles. For example:
  - ❑ For a complete listing of license agreements, refer to the *QLogic Software End User License Agreement*.
  - ❑ What are *shortcut keys*?
  - ❑ To enter the date type *mm/dd/yyyy* (where *mm* is the month, *dd* is the day, and *yyyy* is the year).
- Titles between quotation marks identify related sections within this guide.
- Screen shots that depict only the portion of the interface currently under discussion are shown with jagged edges. For example:



**Figure i Jagged Edged Screen Shot Depicting Partial Interface**

## HP Technical Support

Telephone numbers for worldwide technical support are listed on the HP support website:

<http://www.hp.com/support/>

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Error messages
- Operating system type and revision level
- Detailed questions

For continuous quality improvement, calls may be recorded or monitored.

## HP Websites

For additional information, see the following HP websites:

- <http://www.hp.com>
- <http://www.hp.com/go/storage>

- <http://www.hp.com/support>
- <http://www.docs.hp.com>
- <http://www.hp.com/go/mpx200>

# 1 Getting Started

In a typical storage area network (SAN), the storage array serves one or more servers. When data is migrated from a source LUN to a destination LUN on a different storage array or the same storage array, it is important to understand:

- Which applications and servers (or cluster) are affected?
- How is application data related to a physical storage?
- How does the server access old and new physical storage?

A single blade of the MPX200 can deliver up to 4TB/hr. migration rate. Following the suggestions outlined in this guide may allow you to perform most migration jobs using simple offline migration, while meeting application downtime requirements. Thus, it removes the complexity of performing online data migration using other data migration tools.

## Terminology

This guide uses the following terms:

- **Mount point:** A node or a directory where application data is stored.
- **Volume:** A single, logical presentation of one or more physical disks.
- **Physical disk.** The raw disk device discovered and configured in the operating system. The object represented in the operating system is usually associated to a LUN on a storage array.
- **Multi-pathing software.** The LUN may be accessed through multiple ports on a storage array. Each port of a storage array may be accessed through multiple ports (adapters) in the server. Multi-pathing software in the host manages the multiple paths to a LUN.

## Relationship Between Application Data and Physical Storage

Successful data migration requires that you understand the relationship between the application data and the physical device (LUN).

**NOTE:**

*UNIX operating system* in this discussion refers to HP-UX, Linux, Solaris, and AIX.

Typically, the application accesses the data using a mount point. For example:

- The Windows SharePoint application accesses its data through a mount point `F:\Sharepoint`.
- The Oracle application running on a HP-UX (UNIX) host accesses its data through a mount point `/home/oracle`.
- The Apache Web Server application on a Linux (UNIX) host access its data through a mount point `/data/webinfo`.

Typically, you create a mount point on a volume. On Windows, *volume* refers to a drive letter (for example, `D:\` or `F:\`). On UNIX operating systems, a mount point may be on a volume managed by a logical volume manager (Veritas or native), or a mount point may be directly on raw device (`/dev/rdisk/c0t1d4`).

You can create a volume either on a single physical disk or on multiple physical disks. For example, in Windows, drive letter `F:\` may span multiple physical disks (Disk2, Disk3, and so on). On UNIX, a Veritas Volume Manager may have a volume `/dev/vg-1/vol1` created on three physical disks: `/dev/rdisk/c0t1d2`, `/dev/rdisk/c0t1d3`, and `/dev/rdisk/c0t1d4`.

The physical disk or a *raw device* is associated with a LUN. For example, in Windows, `Disk2` is LUN 5 on a storage array and `Disk3` is LUN 6 on a storage array. In UNIX, `/dev/rdisk/c0t1d2` is LUN 2 on a storage array and `/dev/rdisk/c0t1d3` is LUN 3 on a storage array.

## LUN Access to a Server

Multi-pathing software installed on the server typically manages multi-paths to a LUN. In a typical SAN:

- A single storage array serves multiple servers and provides controlled access to the LUN, often referred as *LUN presentation*.
- Multiple servers and storage arrays are present. Server access to a storage array is often controlled by *name server zoning*.

## General Steps for Data Migration

To perform a successful data migration, follow these recommended steps:

1. Create a data migration checklist. [Chapter 2 Inventory Checklists](#) provides an explanation of each of the checklists, and [Appendix A Checklist Examples](#) shows examples of completed checklists for a specific data migration scenario.

To obtain the template for the checklists, go to QLogic's *HP OEM Solutions* Web page:

<http://qlogic.com/OEMSolutions/Pages/OEMHP.aspx>

2. Configure the MPX200 for migration. For detailed instructions, see the *Data Migration for HP StorageWorks MPX200 User's Guide*, "Using DMS" chapter, and the recommendations in the "Performance" chapter.
3. Migrate the data.
4. Adjust the Fibre Channel zoning in the Fibre Channel switches, and then update the LUN presentation from the destination storage array to the server.
5. After data is migrated from one storage to another storage, do the following:
  - ☐ Update the multi-pathing software on the server, if necessary.
  - ☐ Adjust the mount point for the volume, if necessary. In most cases, volumes are automatically discovered under Windows and UNIX (HP-UX, Linux, Solaris) systems configured with logical volume managers. For details, see [Appendix B Assigning LUNs to the MPX200 for Data Migration](#)
6. For record keeping, save the migration logs.

## Notes

# 2 Inventory Checklists

Data migration checklists help you take inventory of all items affected by a data migration project. This chapter provides a list of servers and applications, and defines relationships of application data to LUNs and how LUNs are accessed through the server. The migration checklists will also help you identify the changes you may need to make to the server after migration.

The tables in this chapter are designed to take proper inventory used for planning data migration, including:

- [Step 1: List the Source and Destination Storage Array](#)
- [Step 2: List the Servers Impacted by the Data Migration Project](#)
- [Step 3: List the Applications, Mount Points, and Paths to the Physical Devices](#)
- [Step 4: List and Create LUN ID Mappings](#)
- [Step 5: List and Create Fibre Channel Zoning](#)

## Step 1: List the Source and Destination Storage Array

The information requested in [Table 2-1](#) can be retrieved from the storage administrator in the data center.

**Table 2-1. Storage Array Information**

Storage Array	Source/ Destination	Firmware Version	Array Management Software <sup>a</sup>	Number of Con- trollers	WWPN <sup>b</sup> (Fibre Channel)

### Table Notes

<sup>a</sup> The storage array specific software that is used in data migration to present the source LUNs to the MPX200, and to create destination LUNs to be presented to the MPX200 and to the server. The array management software also provides the controller and WWPN information for the storage array ports.

<sup>b</sup> World wide port name of the Fibre Channel array; used in performing zoning in Fibre Channel switch firmware.

## Step 2: List the Servers Impacted by the Data Migration Project

The information requested in [Table 2-2](#) can be retrieved by the server administrator(s). You may need to install new multi-pathing software when changing the class of an array or changing the array vendor. You may need to upgrade existing software for the same class of array.

**Table 2-2. Server Information**

Server	Operating System and Version	IP Address	Multi-Pathing Software for Source Array	Logical Volume Manager (if any)	Multi-Pathing Software for Destination Array



## Step 3: List the Applications, Mount Points, and Paths to the Physical Devices

The applications, mount points, and paths to the physical device requested in [Table 2-3](#) can be retrieved by the server administrator. For Windows OS or any UNIX OS with a logical volume manager (LVM), the LUN ID association with the server or application and volume is the most important because, in most cases, the OS will automatically discover the relationship between the volume and the migrated LUN(s) on a destination storage array.

**Table 2-3. Physical Device Information**

Server	Application	Mount Point (if any)	Volume	Physical Disk or Raw Device Node	LUN ID

## Step 4: List and Create LUN ID Mappings

Create a list of LUNs containing the size and mapping information that shows how the LUNs are seen by the server and the MPX200, as shown in [Table 2-4](#). Although a specific LUN may be presented at a different LUN ID to a server other than to MPX200, it is recommended that you use the same LUN ID, if possible. This will be very helpful while creating new LUNs on a destination array, and while presenting source and destination LUNs to MPX200 data migration service. For operating systems other than Windows, it is highly recommended that source and destination LUNs are the same size.

**Table 2-4. LUN ID Mappings**

Server	Source LUN Seen by the Server as LUN ID	Volume ID, Source Array	Capacity	Source LUN Presented to MPX200 as LUN ID and MPX200 VP Group		Destination LUN Presented to MPX200 as LUN ID and MPX200 VP Group		Destination LUN Presented to Server as LUN ID	Capacity
				VP Group	LUN ID	VP Group	LUN ID		

#### Table Notes

You should complete the information for the source and destination LUN during the planning phase of data migration. Determine the unique volume ID for the source storage array to make it easier to refer to the LUN, because sometimes on large arrays, different LUNs with the same LUN ID are presented to different hosts.

Each MPX200 has up to four virtual port groups (VP Groups), each of which can be seen by an array as a different host entity. You can expose the different LUNs as the same LUN ID on each VP Group, enabling you to maintain the same LUN ID exposure to both the host and the MPX200.

## Step 5: List and Create Fibre Channel Zoning

For a Fibre Channel SAN, create a list of fabric zones that contain the WWPN associated with servers, storage arrays (source and destination) and MPX200, as shown in [Table 2-5](#). The destination array should be zoned in only with the MPX200 before migration. After migration, the destination arrays should be zoned in with servers, as shown in [Table 2-6](#).

**Table 2-5. Pre-Migration Fibre Channel Zoning Information**

FC Switch and IP Address	FC Zone Name	Zone Members (WWPNs)	Server, MPX200, Storage Name

**Table 2-6. Post-Migration Fibre Channel Zoning Information**

FC Switch and IP Address	FC Zone Name	Zone Members (WWPNs)	Server, MPX200, Storage Name

# 3 Performance and Downtime

This chapter provides recommendations designed to improve performance and minimize downtime during data migration.

## Optimizing Performance During Data Migration

The MPX200 detects the multiple paths of a specified LUN and performs load balancing using *active optimized* paths. To get the best performance, QLogic highly recommends that LUNs for the source array and destination array are balanced across both controllers. One set of LUNs shows active optimized paths on one controller, while another set of LUNs shows active optimized paths on a different controller.

Where high availability (HA) configuration as redundant SAN is deployed, QLogic highly recommends the following:

- Connect one Fibre Channel port from the MPX200 blade to one SAN, and connect the other port to the redundant SAN.
- Connect Fibre Channel ports from the destination array to both SANs.
- Maximize array performance by simultaneously running 4 to 8 active jobs on a single array. The MPX200 can perform up to 32 active migrations jobs (255 configured) per array.
- Balance across two controllers the LUNs used in migration jobs that run simultaneously.

## Minimizing Downtime

The MPX200's ability to deliver a migration rate of 4TB/hr. per blade—combined with seamless integration of the MPX200 in the SAN and data protection features such as array attributes (source/destination)—make it likely that the downtime objective will be met by offline data migration. The following recommendations will simplify the data migration project:

- Configure all migration jobs in the MPX200 before application downtime begins.
- Deploy dual blade configuration in the MPX200 to achieve up to 8TB/hr. (for storage arrays that are capable of delivering such performance).

## Before Application Downtime

Before application downtime, follow these steps:

1. Plan the data migration project:
  - a. Create the migration checklist.
  - b. Determine if a change in multi-pathing software is required.
  - c. Build the LUN ID table for both the source and destination array to establish the LUN ID relationship between the server and the MPX200.
  - d. Plan to migrate together the LUNs from the same server/cluster.
2. Configure the MPX200 in the SAN: Perform proper zoning such that the MPX200 can see ports from both the source and destination arrays.
3. Create the LUNs on the destination array:
  - ☐ For the UNIX operating system, use the same size LUNs.
  - ☐ For Windows operating systems, you may create a larger LUN.

Do not present LUNs from the destination array to the server until migration is complete.
4. Based on the order in which LUNs should be migrated, balance the LUNs across multiple controllers of the same array.
5. Present the source LUNs and destination LUNs to the MPX200.
6. Using the MPX200 user interface, assign appropriate (source/destination) attributes to the storage array.
7. Using the MPX200, create user-defined groups to assign the migration jobs related to the same server in a single group.
8. Using the user interface wizard, configure migration jobs.

## During Application Downtime

During application downtime, follow these steps:

1. Confirm with the storage administrator that the application and server are down, and that the server no longer has access to the storage under migration.
2. Remove the server access to the source storage array by changing the Fibre Channel zoning such that server adapter ports can no longer see the source or destination array ports.
3. Start the previously configured migration jobs.
4. If required, install the new multi-pathing software on the server.

5. After the data is migrated for the specified server or cluster, present the destination LUNs to the server or cluster by changing the fabric zoning and LUN presentation from the array.
6. Reboot the server, and then validate that the new LUNs are seen by the system and that the volumes are mounted on the destination LUNs.

## **Validating Integrity of the Data**

If there is a file system on the LUN, perform a quick file system check by bringing up the application and confirming access to the data.

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## Notes

# 4 Operating Systems Dependencies

If the source array type is different from the destination array type, you may need to install the new multi-pathing software associated with the destination array.

## **CAUTION!**

Do not expose the destination LUNs to a server until the data migration is complete and server access to the source LUN is removed.

## Windows OS

Migrating data for Windows servers is not difficult. Windows offers two types of disks: *basic disks* and *dynamic disks*. In most cases, Windows will discover the migrated volumes whenever migrated LUNs are seen by the server.

Take the following precautions:

- Do not create new drive letters while data migration is in process.
- Ensure that the destination LUN size is equal or greater than the source LUN size.

## **NOTE:**

A dynamic disk may appear in an offline state after migration and even after presenting the new LUN to the server. To bring the disk to an online state:

1. In the Device Manager, right-click the disk.
2. Depending on the Windows OS version, click either **Import Foreign Disk** or **Reactivate Disk**.

When all dynamic disks are brought back online, the volume will be mounted for application access.

## UNIX OS (HP\_UX, Linux, AIX, Solaris)

On UNIX operating systems—HP\_UX, Linux, AIX, and Solaris—If volumes are managed through logical volume managers, follow these general guidelines:

- Export the volume before migration begins.
- Import the volume after migration is complete and destination LUNs are presented to the server.

If volumes are not managed through a logical volume manager in the system, it is very important to follow the pre-migration checklists to identify the physical device node(s) (`/dev/rdisk/c0t1d1`) on which the volume is mounted. After data migration, the physical device node may change. Change the volume mount such that it now it points to the new physical device (`dev/rdisk/c0t2d5`).

To discover current active mount points, issue the `mount` command on the system console.

Some applications, such as the Oracle Cluster File system (OCFS) may directly use the raw devices. Consult the system administrator. OCFS may automatically discover the migrated devices. Follow the procedure listed in OCFS manual.

In addition, QLogic recommends that the destination LUN size is equal to the source LUN size. Expand the destination LUN after the migration is complete and the migrated volume is remounted.

If you are running Veritas Volume Manager on any of the UNIX operating systems, the destination LUN size must be greater than the source LUN size.



# A Checklist Examples

This appendix provides examples of completed data migration checklists. These examples depict a scenario where a customer is upgrading from an old EMC CX3-20 storage array to a new HP EVA 4400 storage array. Three applications and servers are using the CX3-20 array. Each of these three servers has a different operating system. The information shown with **bold** text in these tables represents changes from the existing configuration.

## Step 1: List the Source and Destination Storage Array

**Table A-1. Example: Storage Array Information**

Storage Array	Source or Destination	Firmware Version	Array Management Software <sup>a</sup>	Number of Controllers	WWPN <sup>b</sup> (Fibre Channel)
EMC CX3-20	Source	03.24.040.5.0 06	Navisphere	2	50-06-01-60-41-e0-18-94 50-06-01-61-41-e0-18-94 50-06-01-62-41-e0-18-94 50-06-01-63-41-e0-18-94
<b>HP EVA 4400</b>	<b>Destination</b>	<b>CR0D63xc3 p-6000</b>	<b>Command View</b>	<b>2</b>	<b>50-00-1F-E1-50-06-22-A1 50-00-1F-E1-50-06-22-A2 50-00-1F-E1-50-06-22-A2 50-00-1F-E1-50-06-22-A3 50-00-1F-E1-50-06-22-A4</b>

### Table Notes

<sup>a</sup> The storage array specific software that will be used in data migration to present the source LUNs to the MPX200, and to create destination LUNs to be presented to the MPX200 and to the server. The array management software will also provide the controller and WWPN information for the storage array ports.

<sup>b</sup> World wide port name of the Fibre Channel array; used in performing zoning in Fibre Channel switch firmware.

## Step 2: List the Servers Impacted by the Data Migration Project

Table A-2 shows an example of the server information that can be retrieved by server administrator(s)

**Table A-2. Example: Server Information**

Server	Operating System and Version	IP Address	Multi-Pathing Software for Source Array	Logical Volume Manager (if any)	Multi-Pathing Software for Destination Array
HR-Dept	Windows SP2	10.3.3.1	EMC Power-Path for Windows	N/A	MPIO DSM for EVA
iPortal	SUSE 10	10.4.3.2	EMC Power-Path for Linux	None	Device Mapper
Sales	HP-UX 11.3	10.4.3.3	EMC Power-Path for HP-UX	Veritas	Secure Path for HP-UX

## Step 3: List Applications, Mount Points, and Paths to the Physical Device

Table A-3 shows an example of the applications, mount points, and path to the physical device, which can be retrieved from the server administrator.

**Table A-3. Example: Physical Device Information**

Server	Application	Mount Point (if any)	Volume	Physical Disk or Raw Device Node	LUN ID
HR-Dept	Sharepoint	F:\Sharepoint	F:\	Disk2, Disk3 (Dynamic Disks)	2, 3
iPortal	Apache Web Server	/data/webinfo	/dev/sdb	/dev/sdb	2
Sales	Oracle	/home/oracle	/dev/vg-2/vol2	/dev/rdisk/c0t1d5 /dev/rdisk/c0t1d6 /dev/rdisk/c0t1d7	5, 6, 7

## Step 4: List and Create LUN ID Mappings

Table A-4 shows that a different LUN from a storage array is presented as the same LUN ID (2) on two different servers (HR-Dept, iPortal).

**Table A-4. Example: LUN ID Mappings**

Server	Source LUN Seen by the Server as LUN ID	Volume ID, Source Array	Capacity	Source LUN Presented to MPX200 as LUN ID and MPX200 VP Group		Destination LUN Presented to MPX200 as LUN ID and MPX200 VP Group		Destination LUN Presented to Server as LUN ID	Capacity
				VP Group	LUN ID	VP Group	LUN ID		
HR-Dept	2	1	100GB	0	2	0	2	2	200GB
	3	2	250GB	0	3	0	3	3	500GB
iPortal	2	3	250GB	1	2	1	2	2	250GB
Sales	5	4	300GB	0	5	0	5	5	300GB
	6	5	300GB	0	6	0	6	6	300GB
	7	6	300GB	0	7	0	7	7	300Gb

## Step 5: List and Create Fibre Channel Zoning

In Table A-5, we assume that it is a redundant configuration, meaning there are:

- Two Fibre Channel switches
- Multiple servers, each with two adapter ports
- One storage array with two controllers
- Four ports per controller.

**Table A-5. Example A: Pre-Migration Fibre Channel Zoning Information**

FC Switch and IP Address	FC Zone Name	Zone Members (WWPNs)	Server, MPX200, Storage Name
FC-SW-1 10.5.3.1	Zone-A	21-00-00-C0-DD-C0-8A-D7 21-00-00-C0-DD-C0-55-57 21-00-00-C0-DD-C0-60-66 50-06-01-60-41-E0-18-94 50-06-01-62-41-E0-18-94	HR-Dept: P1 iPortal: P1 Sales: P1 SRC-Array-ABC: P1 SRC-Array-ABC: P3
FC-SW-2 10.5.3.2	Zone-B	21-00-00-C0-DD-C0-8A-D8 21-00-00-C0-DD-C0-55-58 21-00-00-C0-DD-C0-60-67 50-06-01-61-41-E0-18-94 50-06-01-63-41-E0-18-94	HR-Dept: P2 iPortal: P2 Sales: P2 SRC-Array-ABC: P2 SRC-Array-ABC: P4

Table A-6 shows new Fibre Channel zones information to configure MPX200 for data migration and to migrate the data. The MPX200 Fibre Channel ports are configured with source and destination arrays.

**Table A-6. Example B: Pre-Migration Fibre Channel Zoning Information**

FC Switch and IP Address	FC Zone Name	Zone Members (WWPNs)	Server, MPX200, Storage Name
FC-SW-1 10.5.3.1	Zone-A-DM	21-00-00-C0-DD-C0-88-81 50-06-01-60-41-E0-18-94 50-06-01-62-41-E0-18-94 50-00-1F-E1-50-06-22-A1 50-00-1F-E1-50-06-22-A2	MPX200, FC1 SRC-Array-ABC: P1 SRC-Array-ABC: P3 DEST-Array-XYZ: P1 DEST-Array-XYZ: P3
FC-SW-1 10.5.3.2	Zone-B-DM	21-00-00-C0-DD-C0-88-82 50-06-01-61-41-E0-18-94 50-06-01-63-41-E0-18-94 50-00-1F-E1-50-06-22-A8 50-00-1F-E1-50-06-22-A9	MPX200: FC2 SRC-Array-ABC: P2 SRC-Array-ABC: P4 DEST-Array-XYZ: P2 DEST-Array-XYZ: P4

Table A-7 shows an example of post-migration Fibre Channel zoning information:

**Table A-7. Example: Post-Migration Fibre Channel Zoning Information**

FC Switch and IP Address	FC Zone Name	Zone Members (WWPNs)	Server, MPX200, Storage Name
FC-SW-1/10.5.3.1	Zone-A	21-00-00-C0-DD-C0-8A-D7 21-00-00-C0-DD-C0-55-57 21-00-00-C0-DD-C0-60-66 50-00-1F-E1-50-06-22-A1 50-00-1F-E1-50-06-22-A2	HR-Dept: P1 iPortal: P1 Sales: P1 DEST-Array-XYZ: P1 DEST-Array-XYZ: P3
FC-SW-2/10.5.3.2	Zone-B	21-00-00-C0-DD-C0-8A-D8 21-00-00-C0-DD-C0-55-58 21-00-00-C0-DD-C0-60-67 50-00-1F-E1-50-06-22-A8 50-00-1F-E1-50-06-22-A9	HR-Dept: P2 iPortal: P2 Sales: P2 DEST-Array-XYZ: P2 DEST-Array-XYZ: P4

## Notes

# **B** Assigning LUNs to the MPX200 for Data Migration

For successful completion of data migration, you must assign source and destination LUNs to the MPX200 using storage array management tools. The MPX200 appears as a host to the array controller. This appendix provides procedures for using some of the array management tools to assign LUNs, including:

- [Assigning LUNs from an MSA2012fc Array](#)
- [“Assigning LUNs from an MSA1000/1500 Array” on page B-4](#)
- [“Assigning LUNs from an HDS Array” on page B-7](#)
- [“Assigning LUNs from an IBM DS4K/DS5K/LSI Array” on page B-12](#)
- [“Assigning LUNs from an EVA 4/6/8000 Series Array” on page B-16](#)
- [“Assigning LUNs from an EMC CLARiiON Array” on page B-20](#)

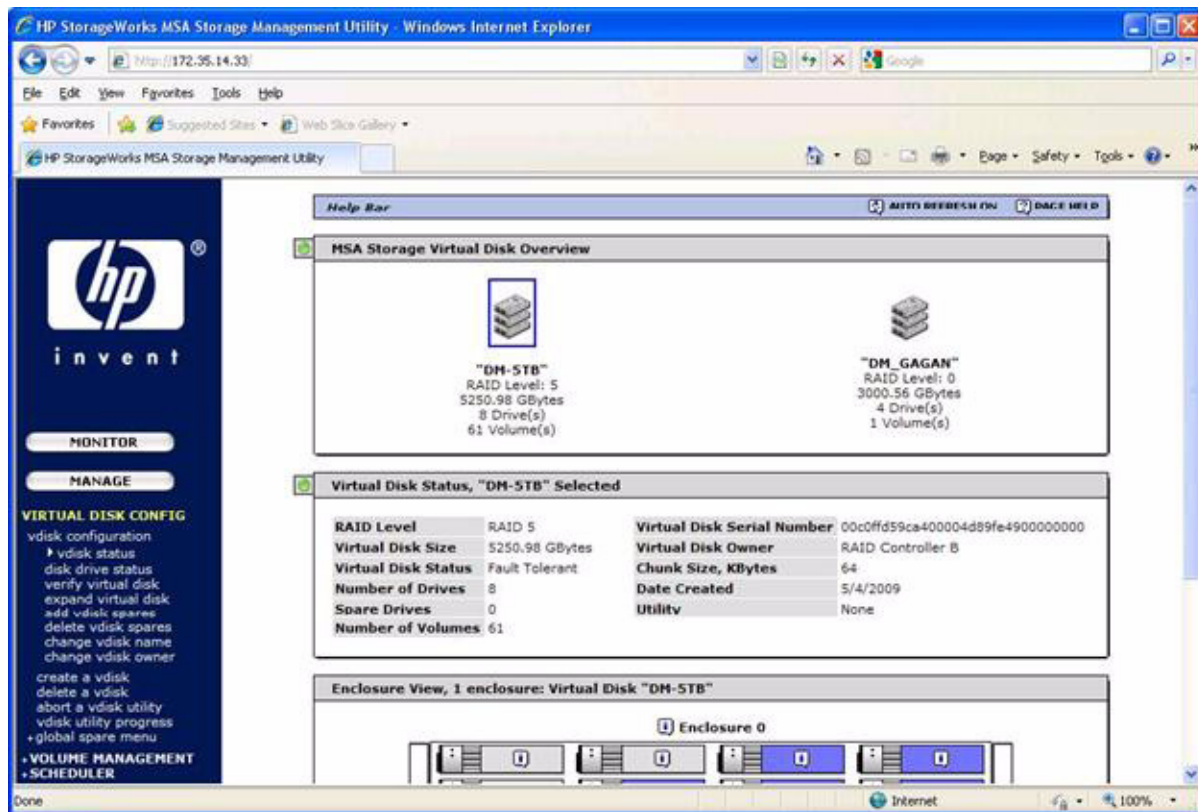
## Assigning LUNs from an MSA2012fc Array

<b>Storage Vendor</b>	HP
<b>Array Model</b>	MSA2012fc arrays
<b>LUN Assignment Tool</b>	Storage Management Utility user interface

### To assign LUNs:

1. Perform zoning as follows:
  - a. Connect the Fibre Channel ports of the data migration appliance to a switch where the storage controller ports are also logged.
  - b. Using switch management tools, create a zone DM\_Host\_MSA2012, and then add the WWPN of the data migration appliance Fibre Channel ports and storage controller ports in this zone.
  - c. Save the zoning information and activate the new zoning configuration.

2. In Internet Explorer, open the Storage Management Utility using the IP assigned to the storage controller.
3. In the left pane, click **Manage** to open the management menu (see [Figure B-1](#)).

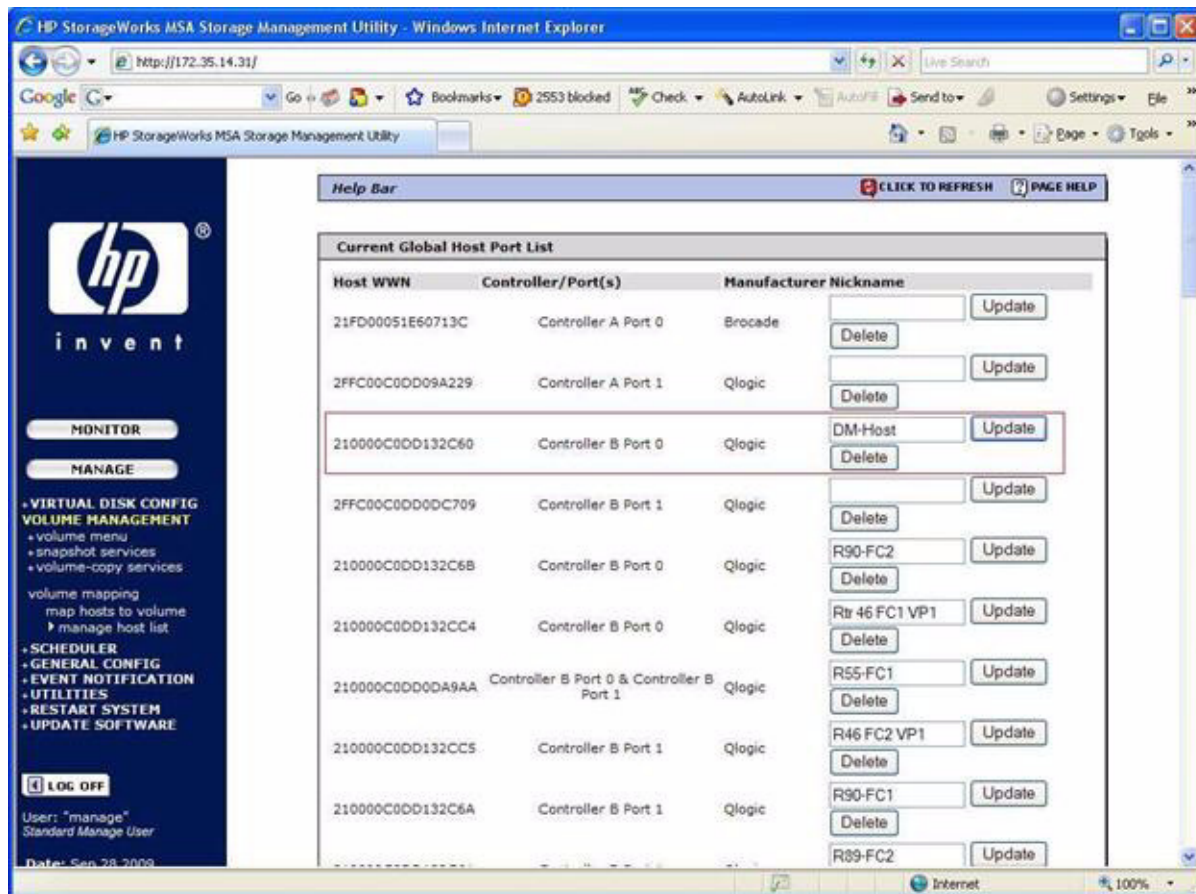


**Figure B-1 Viewing the Storage Management Utility**

4. In the left pane, click **VOLUME MANAGEMENT**, click **volume mapping**, and then click **manage host list**.

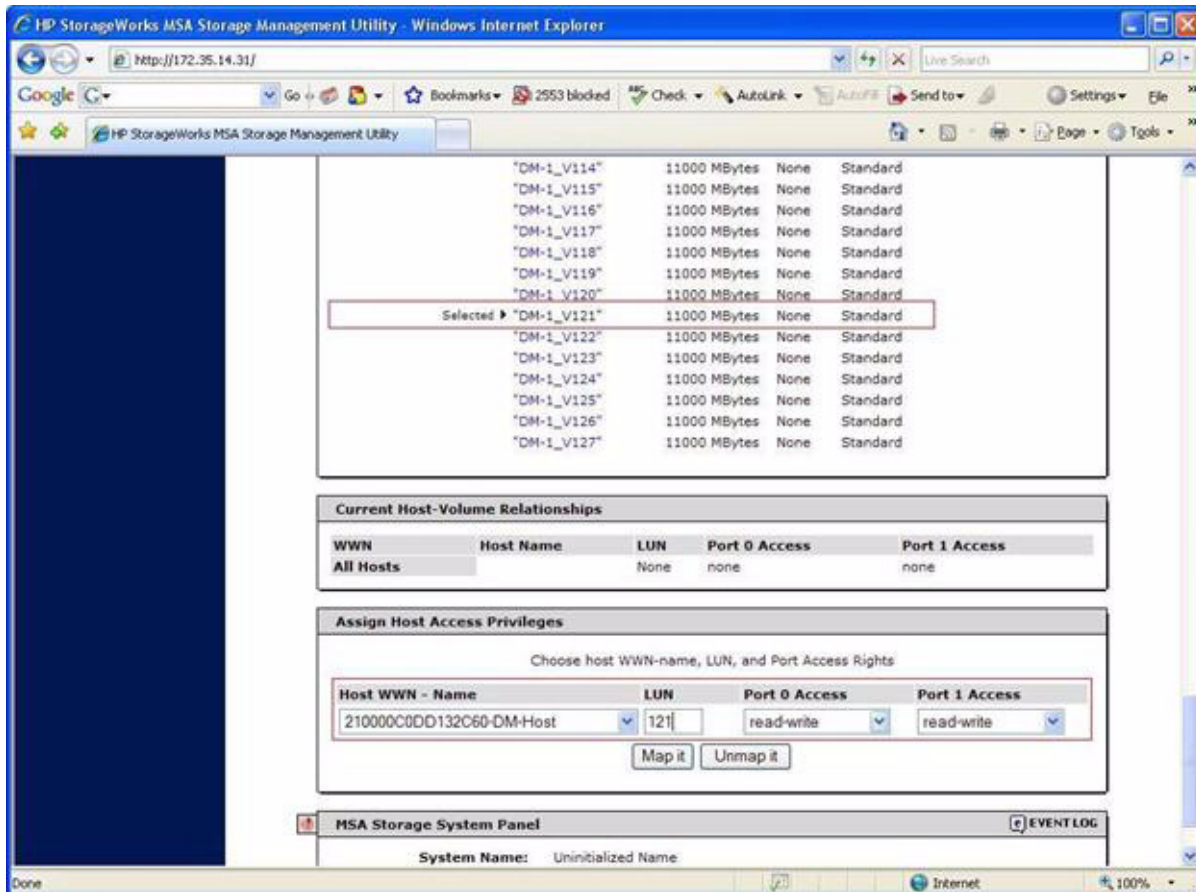
[Figure B-2](#) shows the WWPN of the data migration appliance in the right pane.





**Figure B-2 Viewing WWPNS in Storage Management Utility**

5. In the **Manufacturer Nickname** box, type **DM-Host**.
6. To accept and save the changes, click **Update**.
7. In the left pane, click **VOLUME MANAGEMENT**, click **volume mapping**, and then click **map hosts to volume**.
8. In the right pane, click the LUN to be assigned to the data migration appliance (see [Figure B-3](#)).



**Figure B-3 Selecting LUNs in Storage Management Utility**

9. In the **Assign Host Access Privileges** table, select the DM-Host in the **Host WWN - Name** list, and then enter the appropriate, planned LUN ID.
10. To accept and save the LUN assignment, click **Map it**.
11. Refresh the data migration user interface to see if the LUN assignment is reflected properly, and that the appropriate array entity appears under **FC Array**. (You may need to click the **Refresh** button several times to correctly reflect the changes.)

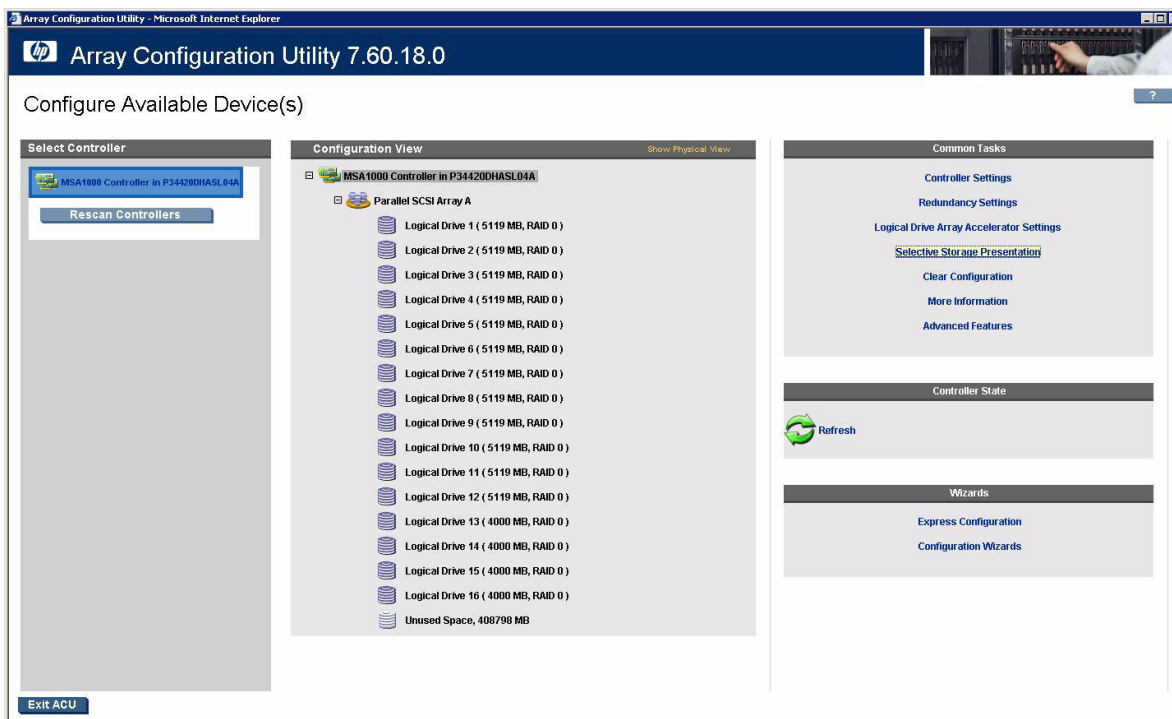
## Assigning LUNs from an MSA1000/1500 Array

Storage Vendor	HP
Array Model	MSA 1000/1500 arrays
LUN Assignment Tool	Storage Navigator Modular user interface

### To assign LUNs:

1. Perform zoning as follows:
  - a. Connect the Fibre Channel ports of the data migration appliance to a switch where the storage controller ports are also logged.
  - b. Using switch management tools, create a zone DM\_Host\_MSA1000, and then add the WWPN of the data migration appliance Fibre Channel ports and storage controller ports in this zone.
  - c. Save the zoning information and activate the new zoning configuration.
2. Open the Array Configuration Utility.

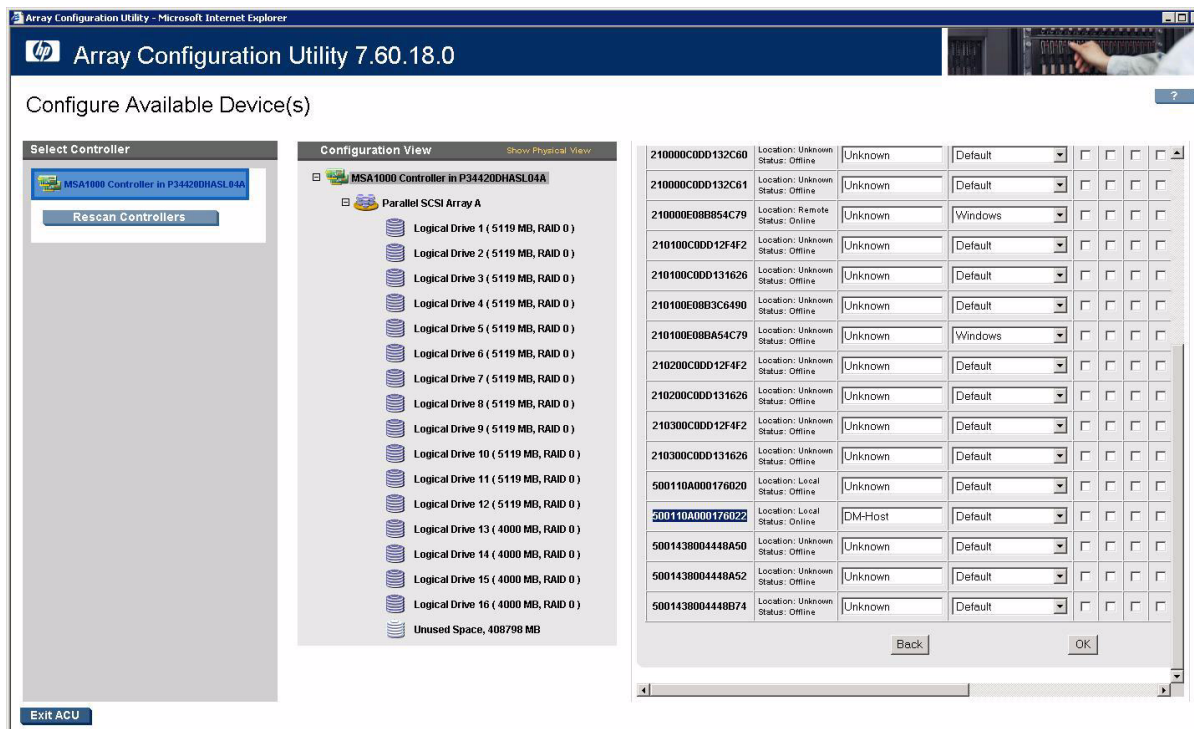
The Configure Available Device(s) window appears, as shown in [Figure B-4](#).



**Figure B-4 Configure Available Device(s)**

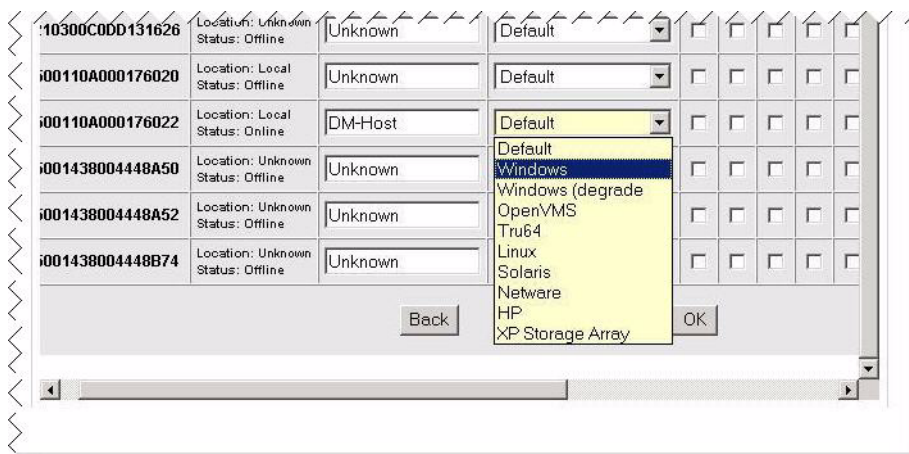
3. In the right pane under **Common Tasks**, click **Selective Storage Presentation**, and then click **Enable**.

A list of the WWPNs seen by the MSA controller appears, as shown in [Figure B-5](#).



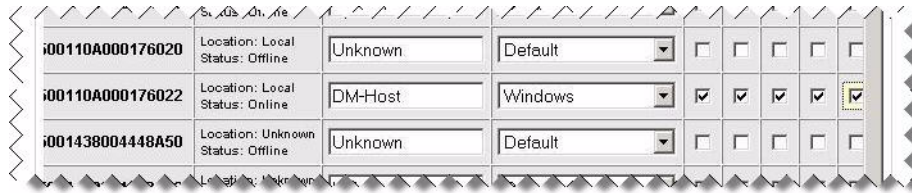
**Figure B-5 Entering a Connection Name**

4. Enter **DM-Host** as the connection name for the data migration appliance WWPN.
5. From the list box, select **Windows** as the host mode value, as shown in [Figure B-6](#).



**Figure B-6 Selecting the Host Mode**

6. Select the LUNs to be assigned to the DM-Host by checking the box associated with the previously planned LUNs, as shown in [Figure B-7](#).



**Figure B-7 Selecting LUNs**

7. To accept and save the LUN assignment, click **OK**.
8. Refresh the data migration user interface to see if the LUN assignment is reflected properly, and that the appropriate array entity appears under **FC Array**. (You may need to click the **Refresh** button several times to correctly reflect the changes.)

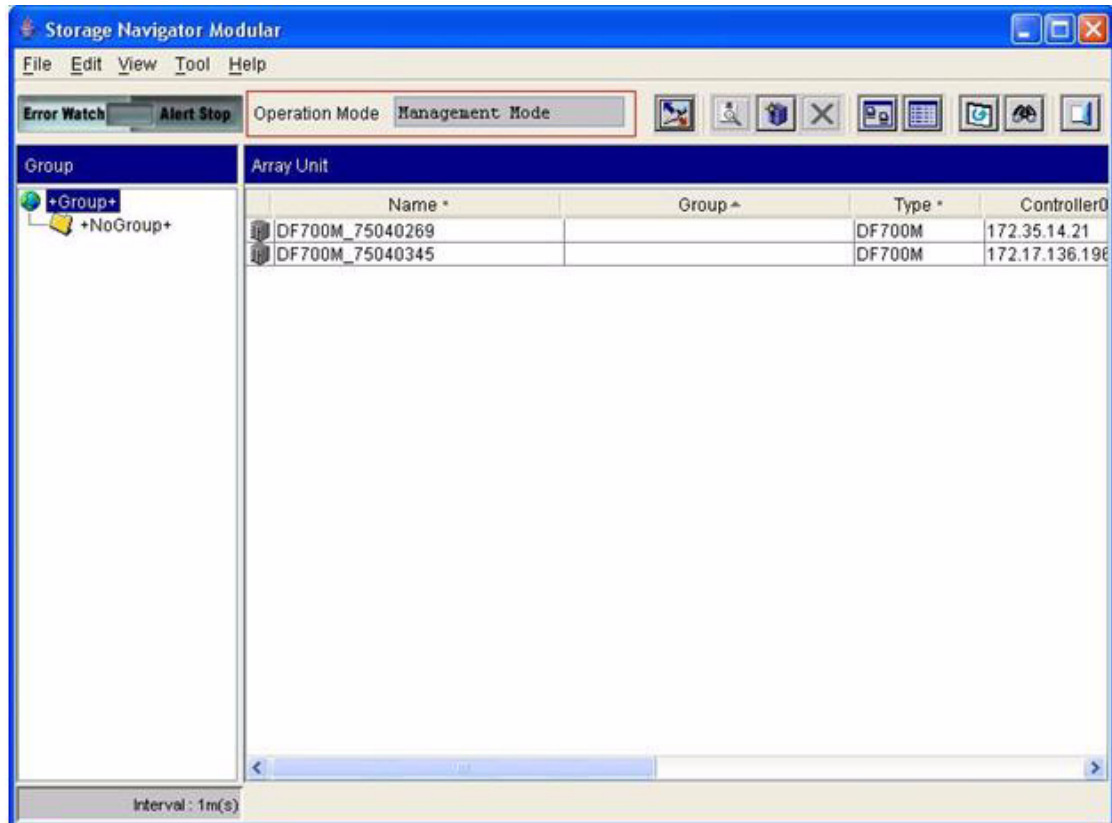
## Assigning LUNs from an HDS Array

<b>Storage Vendor</b>	HDS
<b>Array Model</b>	AMS/WMS series arrays
<b>LUN Assignment Tool</b>	Storage Navigator Modular user interface

### To assign LUNs:

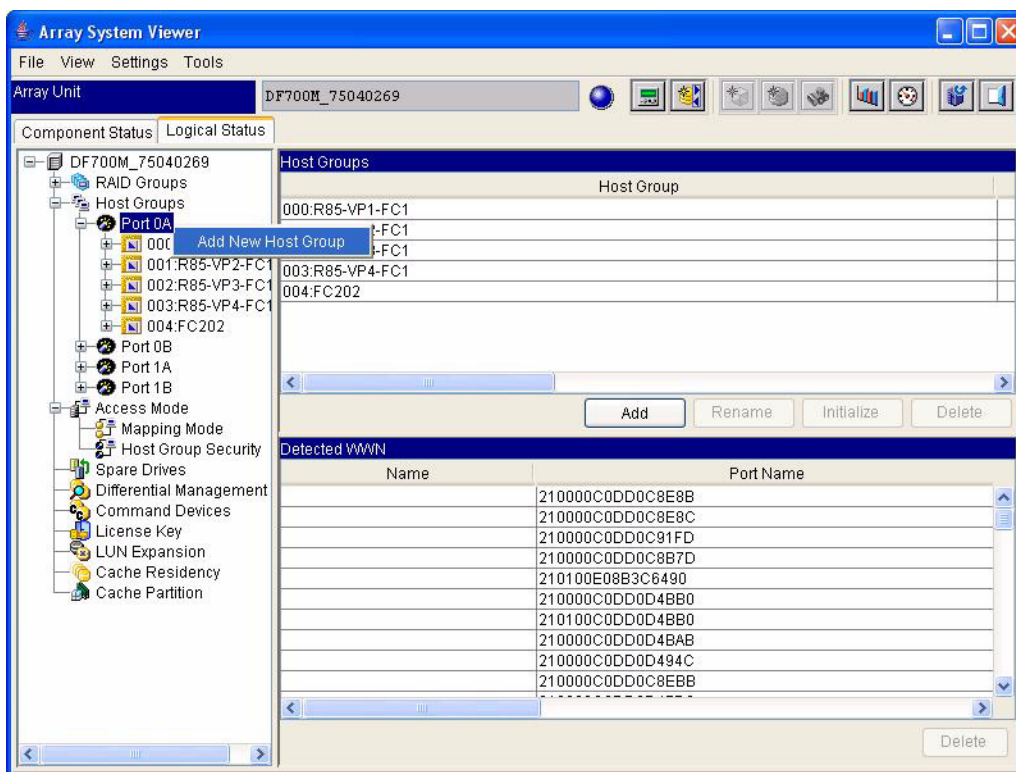
1. Perform zoning as follows:
  - a. Connect the Fibre Channel ports of the data migration appliance to a switch where the storage controller ports are also logged.
  - b. Using switch management tools, create a zone, **DM\_Host\_HDS**.
  - c. In this zone, add the WWPN of the data migration appliance Fibre Channel ports and storage controller ports.
  - d. Save the zoning information and activate the new zoning configuration.
2. Open the Storage Navigator Modular application. If you are using the tool for the first time, you may have to discover the array using the IP assigned to the storage controller.
3. On the **Tool** menu, click **Operation Mode > Change**, and then change to **Management Mode**.





**Figure B-8 Changing to Management Mode**

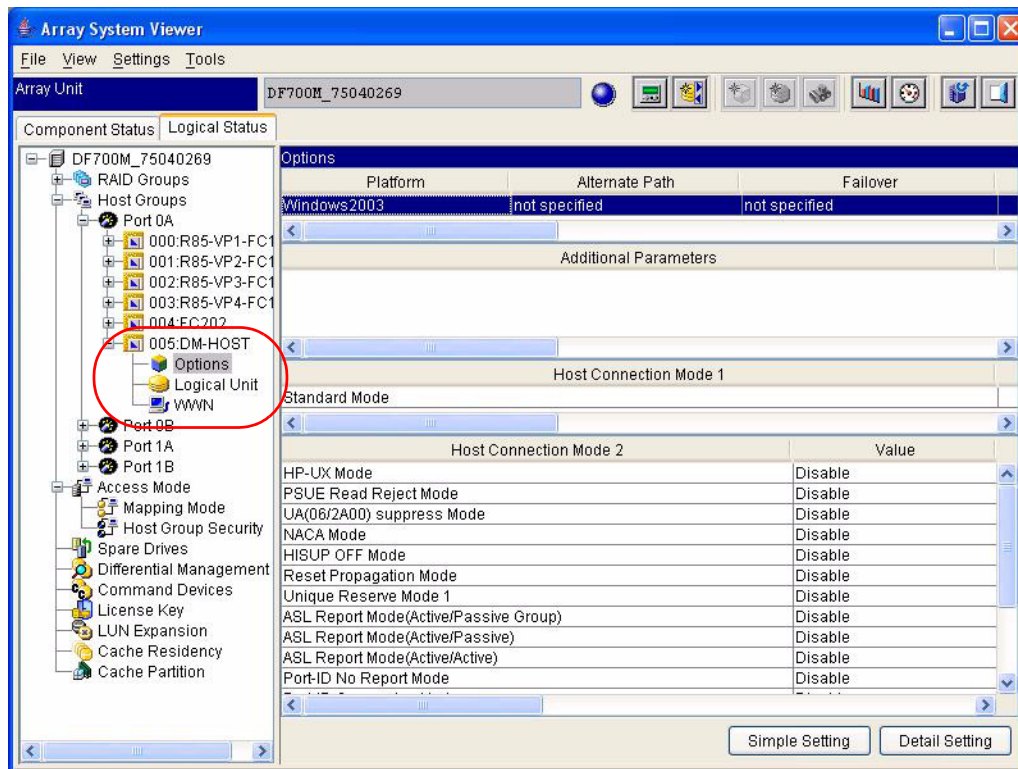
4. Under **Array Unit**, double-click the name of the array to manage.  
The Array System Viewer window opens.
5. In the left pane, click the **Logical Status** tab.
6. In the left pane, right-click the port of the array that has been zoned with the data migration appliance, and then click **Add New Host Group** (see [Figure B-9](#)).



**Figure B-9 Selecting a Port for New Host Group**

7. In the Host Group dialog box, type **DM-Host** in the **Name** box, and then click **OK**.
8. In the Array System Viewer left pane under **Host Groups**, click the **+** sign next to the port to expand the newly-created DM-Host group entity.

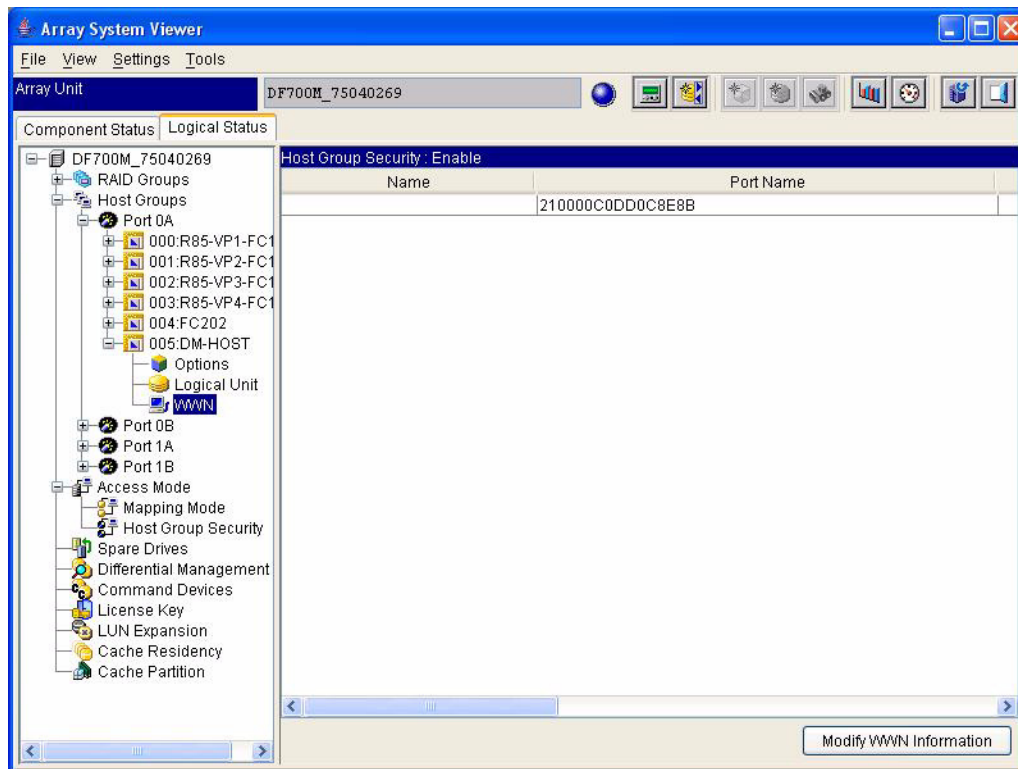
Three nodes are listed: **Options**, **Logical Unit**, and **WWN**, as shown in [Figure B-10](#).




**Figure B-10 Selecting DM-Host Nodes**

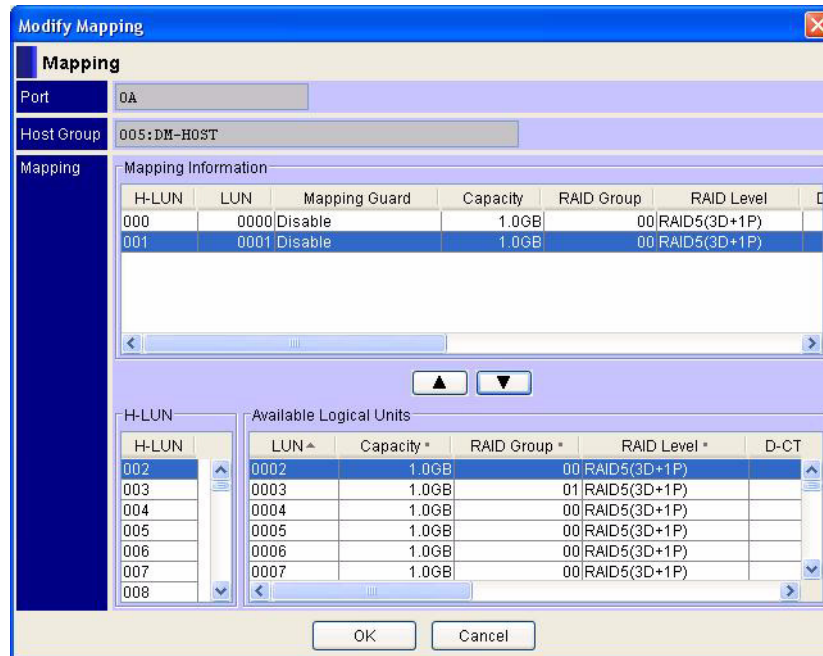
9. In the left pane, click the **Options** node, and then at the bottom of the right pane, click **Simple Setting**.
10. Complete the Simple Setting dialog box as follows:
  - a. Next to **Platform**, select **Windows2003**.
  - b. Keep the other settings as default.
  - c. To save the changes, click **OK**.
11. In the Array System Viewer dialog box, under the **DM-Host** group, click the **WWN** node. Then at the bottom of the right pane, click **Modify WWN Information** (see [Figure B-11](#)).





**Figure B-11 Array System Viewer**

12. Complete the Modify WWN Information dialog box as follows:
  - a. Under **Assignable WWN**, click the WWN of the data migration appliance.
  - b. Click **Add**.
  - c. To accept and save the WWN information, click **OK**.
13. Under the **DM-Host** group, click the **Logical Unit** node. Then at the bottom of the right pane, click **Modify Mapping**.
14. Complete the Modify Mapping dialog box as follows (see [Figure B-13](#)):
  - a. Under **H-LUN / Available Logical Units**, select an appropriate LUN.
  - b. Click the  (up arrow) to map the LUN to the **DM-Host** group.
  - c. To accept and save the LUN assignment, click **OK**.



**Figure B-12 Modifying Mapping**

15. Refresh the data migration user interface to see if the LUN assignment is reflected properly, and that the appropriate array entity appears under **FC Array**. You may have to reboot the data migration appliance or generate a registered state change notification (RSCN) to initiate a full rescan on HDS array, because it does not send any notification indicating changes in LUN assignment to the logged in initiators.

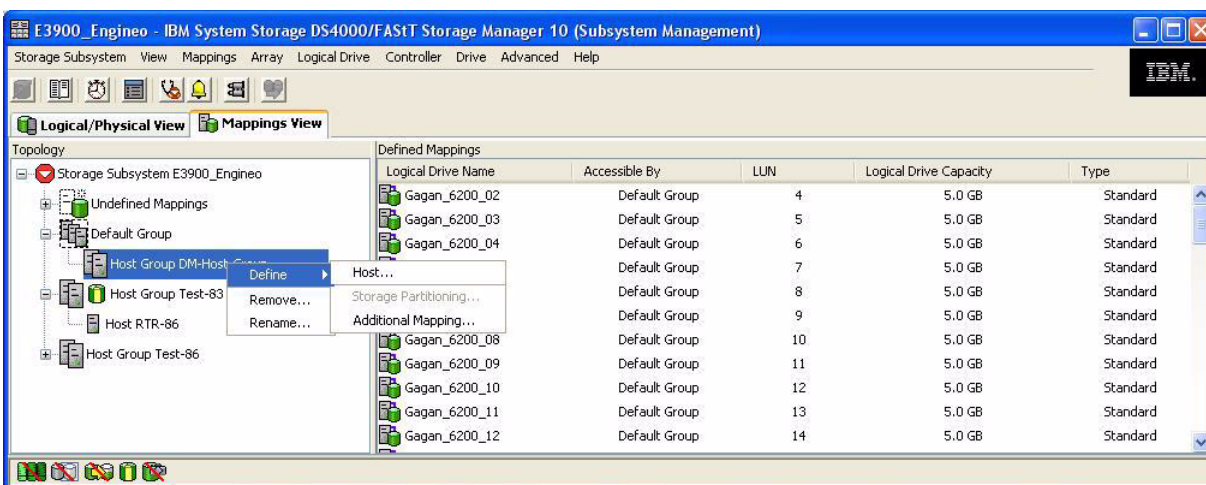
## Assigning LUNs from an IBM DS4K/DS5K/LSI Array

Storage Vendor	IBM
Array Model	IBM DS4000/Engineo series arrays
LUN Assignment Tool	Storage Manager Client 1e

### To assign LUNs:

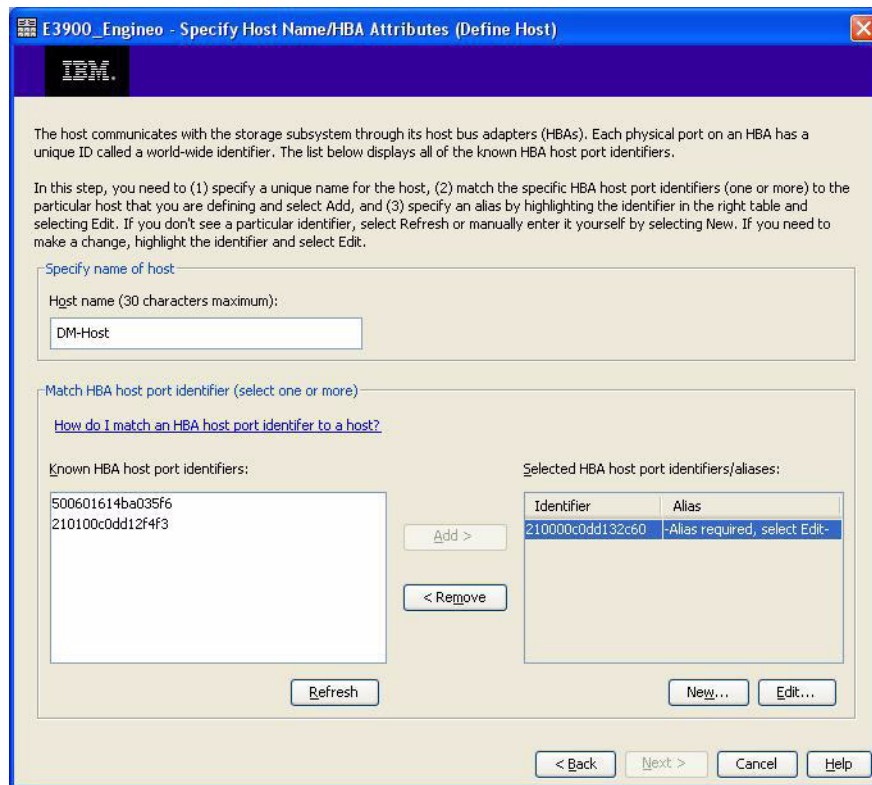
1. Perform zoning as follows:
  - a. Connect the Fibre Channel ports of the data migration appliance to a switch where the storage controller ports are also logged.
  - b. Using switch management tools, create a zone, **DM\_Host\_IBM**.

- c. In this zone, add the WWPN of the data migration appliance Fibre Channel ports and storage controller ports.
  - d. Save the zoning information and activate the new zoning configuration.
2. Open the Storage Manager Client configuration utility, and then select the array to manage.
  3. On the Subsystem Management window, in the left pane, click the **Mappings View** tab.
  4. In the left pane, right-click **Default Group**, point to **Define**, and then click **Host**. (see [Figure B-13](#)).



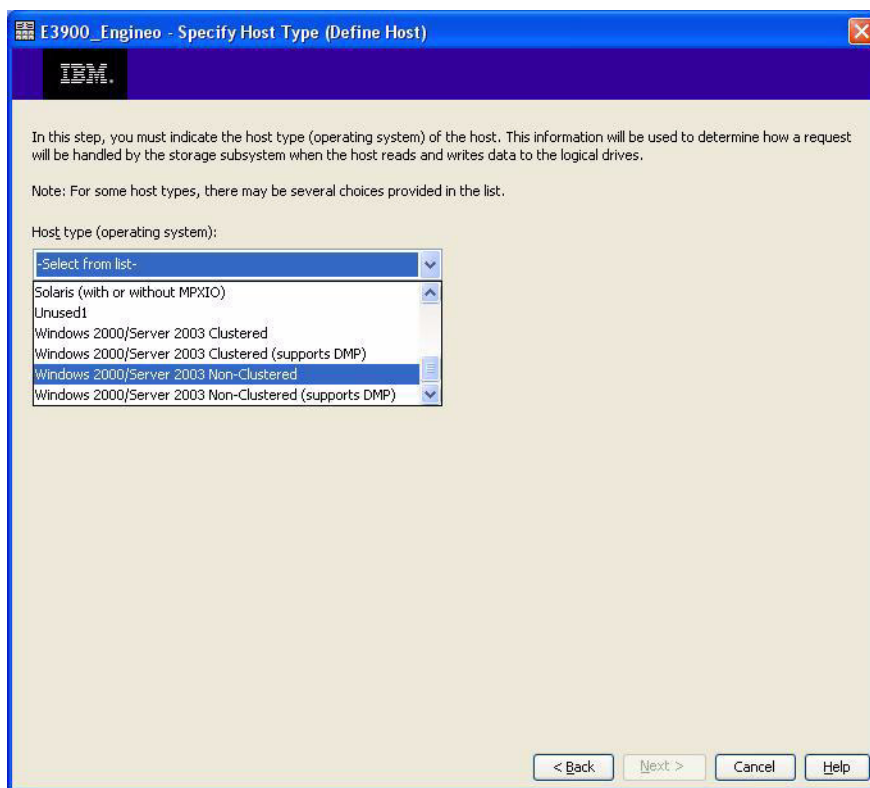
**Figure B-13 Selecting Host to Define**

5. Complete the Define Host wizard as follows (see [Figure B-14](#)):



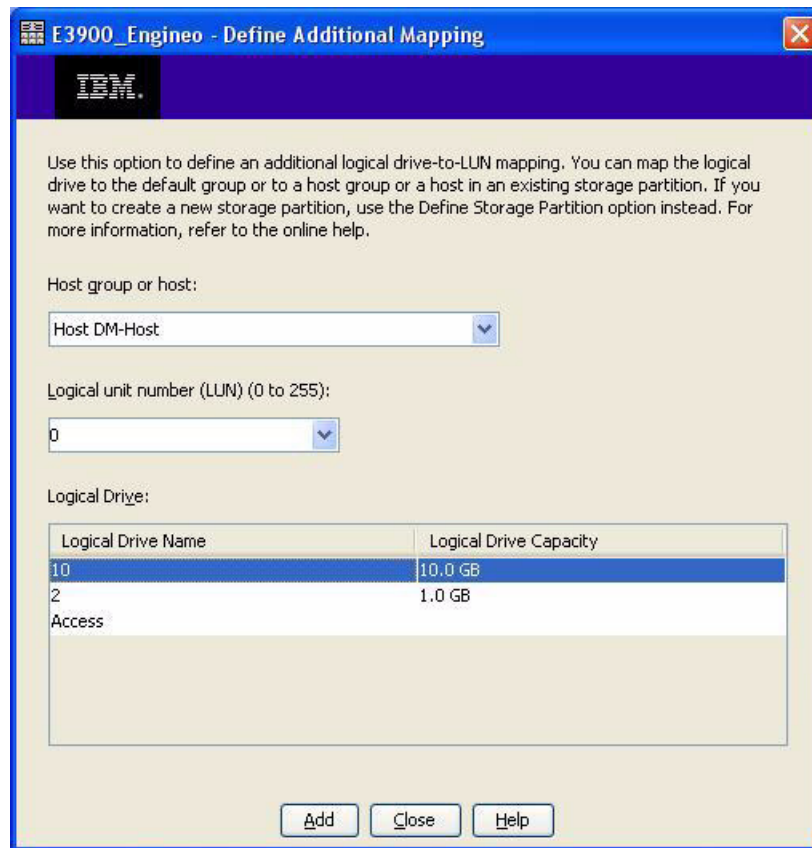
**Figure B-14 Defining the Host**

- Under **Specify name of host**, type **DM-Host** as the name for the data migration appliance.
- In the **Known HBA host port identifiers** box, click the WWPN of the data migration appliance.
- Click **Add** to move the selected WWPN to the **Selected HBA host port identifiers/aliases** box.
- Click **Edit**, and then in the Edit Identifier/Alias dialog box, type an alias for the WWPN. Click **OK** to close the dialog box.
- Click **Next**.
- In the Specify Host Type window (see [Figure B-15](#)) under **Host type (operating system)**, click **Windows 2000/Server 2003 Non-Clustered**.



**Figure B-15 Selecting Host Operating System**

- g. Click **Next**.
6. On the Subsystem Management window, in the left pane's Mapping View page, click either **Undefined Mappings** or the host group/host that currently has access to the LUNs that need to be part of data migration jobs.
7. Select the LUNs to be assigned to the DM-Host by right-clicking the LUN in the right pane, and then clicking **Change Mappings**.
8. Complete the Define Additional Mapping dialog box as follows (see [Figure B-16](#)):
  - a. In the **Host group or host** box, click **DM-Host**.
  - b. In the **Logical unit number (LUN) (0 to 255)** box, click the previously planned LUN number.
  - c. Under **Logical Drive**, click the appropriate logical drive.
  - d. To accept and save the LUN assignment, click **Add**.



**Figure B-16 Defining Additional Mapping**

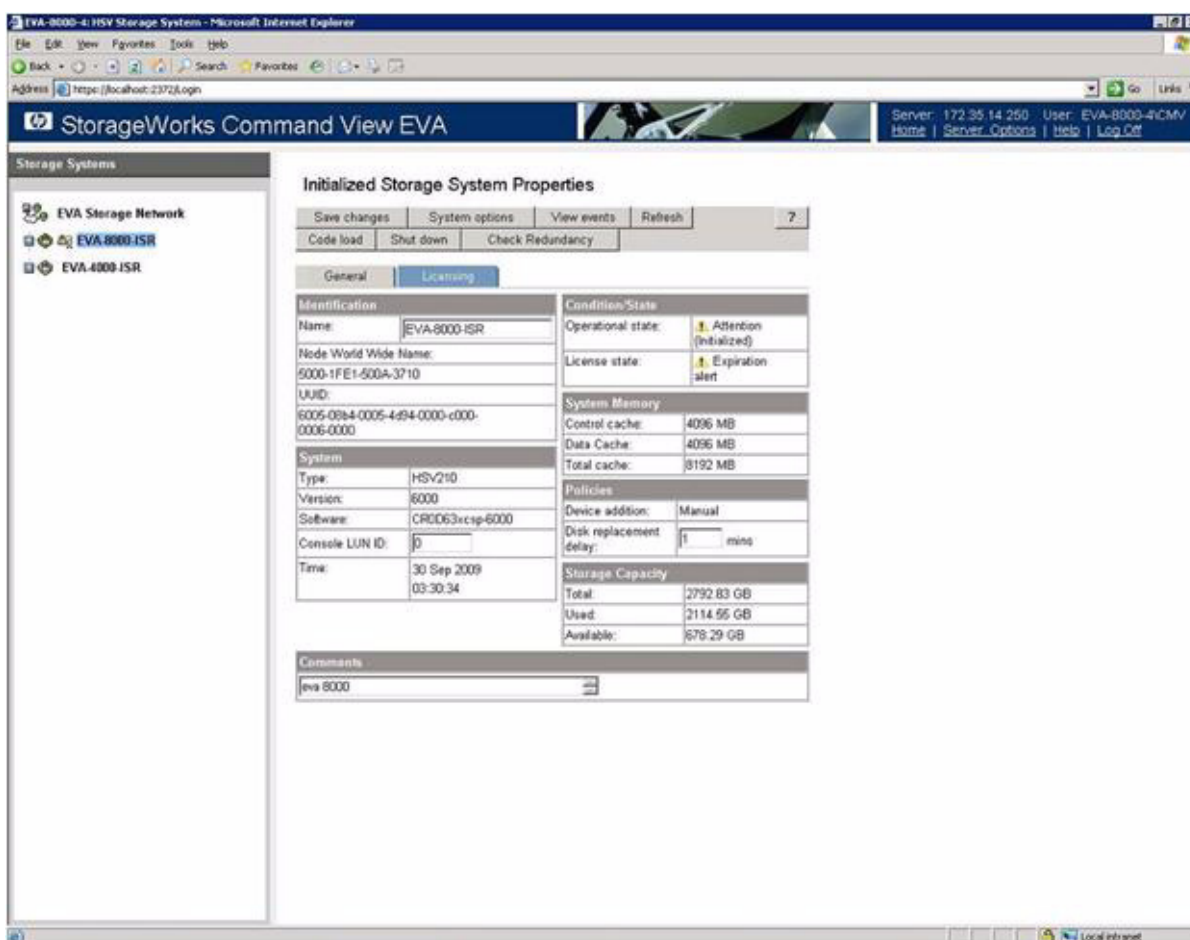
9. Refresh the data migration user interface to see if the LUN assignment is reflected properly, and that the appropriate array entity appears under **FC Array**. (You may need to click the **Refresh** button several times to correctly reflect the changes.)

## Assigning LUNs from an EVA 4/6/8000 Series Array

Storage Vendor	HP
Array Model	EVA 4/6/8000 series arrays
LUN Assignment Tool	Command View user interface

### To assign LUNs:

1. Perform zoning as follows:
  - a. Connect the Fibre Channel ports of the data migration appliance to a switch where the storage controller ports are also logged.
  - b. Using switch management tools, create a zone, **DM\_Host\_EVA**.
  - c. In this zone, add the WWPN of the data migration appliance Fibre Channel ports and storage controller ports.
  - d. Save the zoning information and activate the new zoning configuration.
2. Open the Command View EVA application, as shown in [Figure B-17](#).

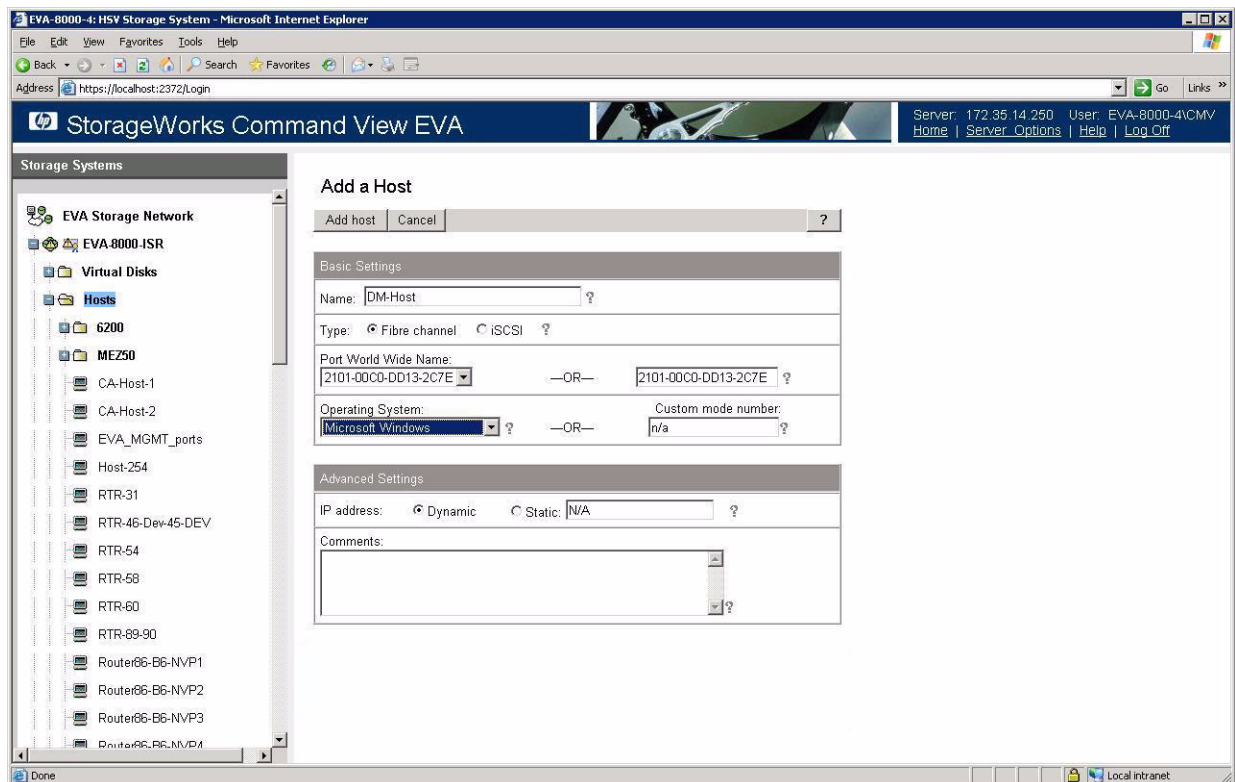


**Figure B-17 Opening Command View EVA**

3. In the left pane, double-click the array that you want to manage. This expands the nodes under the selected array.
4. In the left pane, click the **Hosts** node.



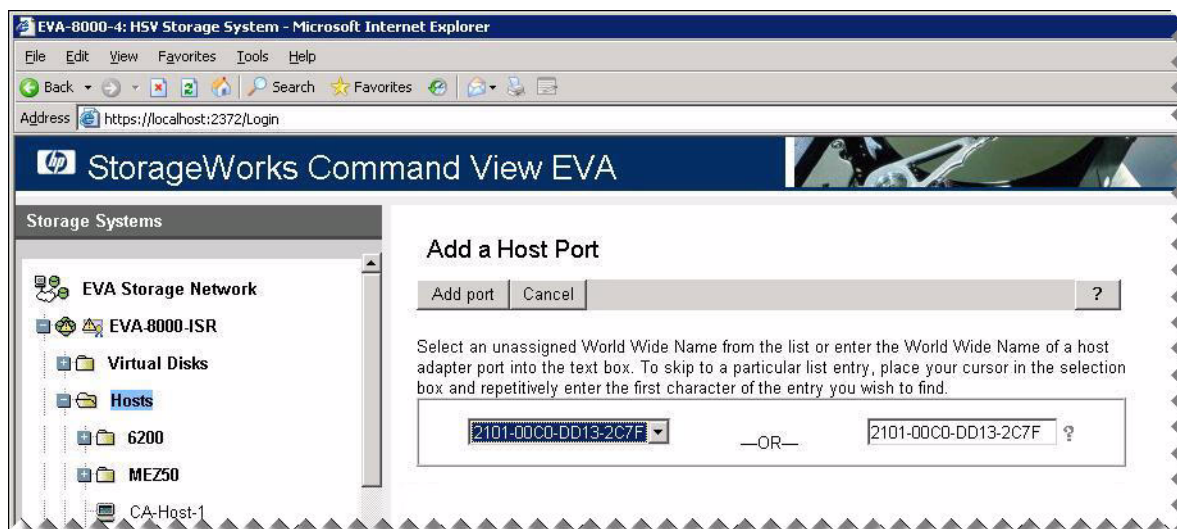
5. Complete the **Add a Host** information in the right pane as follows (see [Figure B-18](#)):
  - a. Under **Basic Settings** in the **Name** box, type **DM-Host**.
  - b. Under **Port World Wide Name**, click the WWN of the data migration appliance.
  - c. Under **Operating System**, click **Microsoft Windows**.
  - d. Click the **Add host** button.



**Figure B-18 Adding a Host**

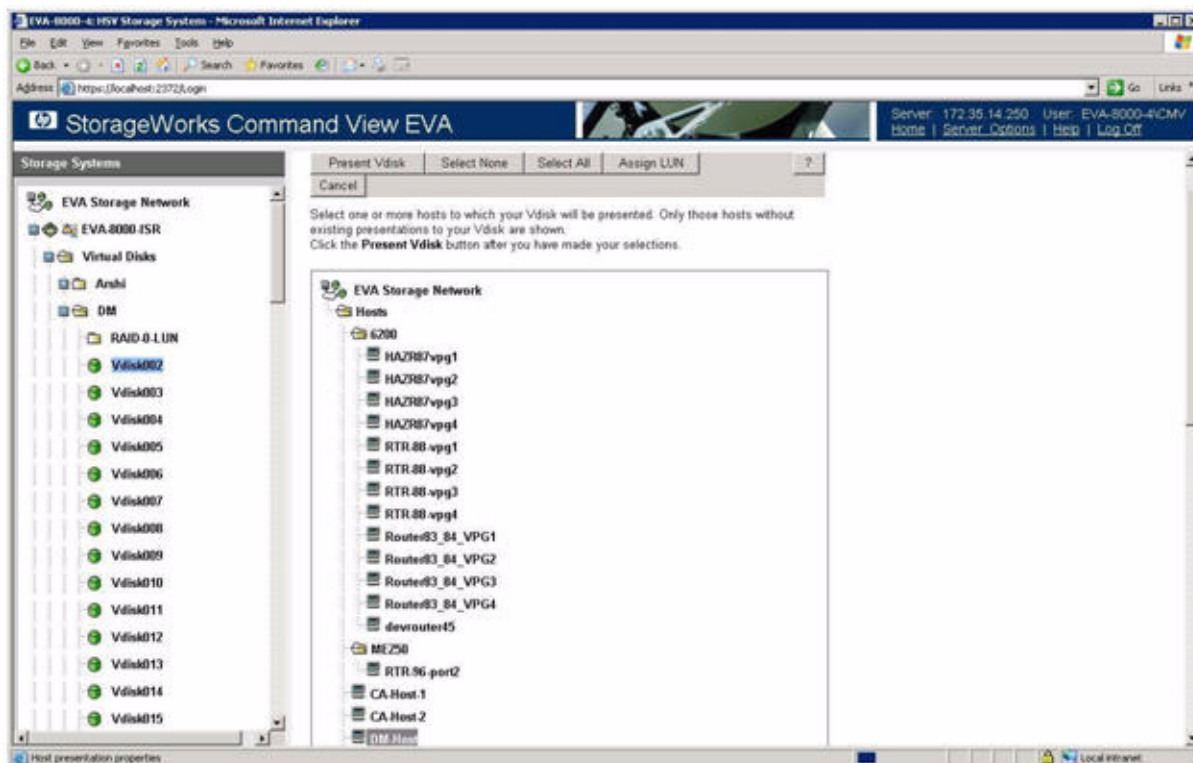
6. If you have a multi-path configuration, add the second router port to the DM-Host entity as follows (see [Figure B-19](#)):
  - a. Under the **Hosts** tree in the left pane, click the **DM-Host** node.
  - b. In the right pane, click the **Ports** tab.
  - c. On the Add a Host Port page, select a WWN, and then click the **Add port** button.





**Figure B-19 Adding a Second Host Port**

7. Present virtual disks as follows (see [Figure B-20](#)):
  - a. In the left pane, double-click the **Virtual Disks** node.
  - b. Click the LUN that needs to be presented to the data migration appliance for data migration.
  - c. In the right pane, click the **Presentation** tab, and then click the DM-Host.
  - d. To accept and save the LUN assignment, click **Present Vdisk**.



**Figure B-20 Presenting Vdisks**

8. Refresh the data migration user interface to see if the LUN assignment is reflected properly, and that the appropriate array entity appears under **FC Array**. (You may need to click the **Refresh** button several times to correctly reflect the changes.)

## Assigning LUNs from an EMC CLARiiON Array

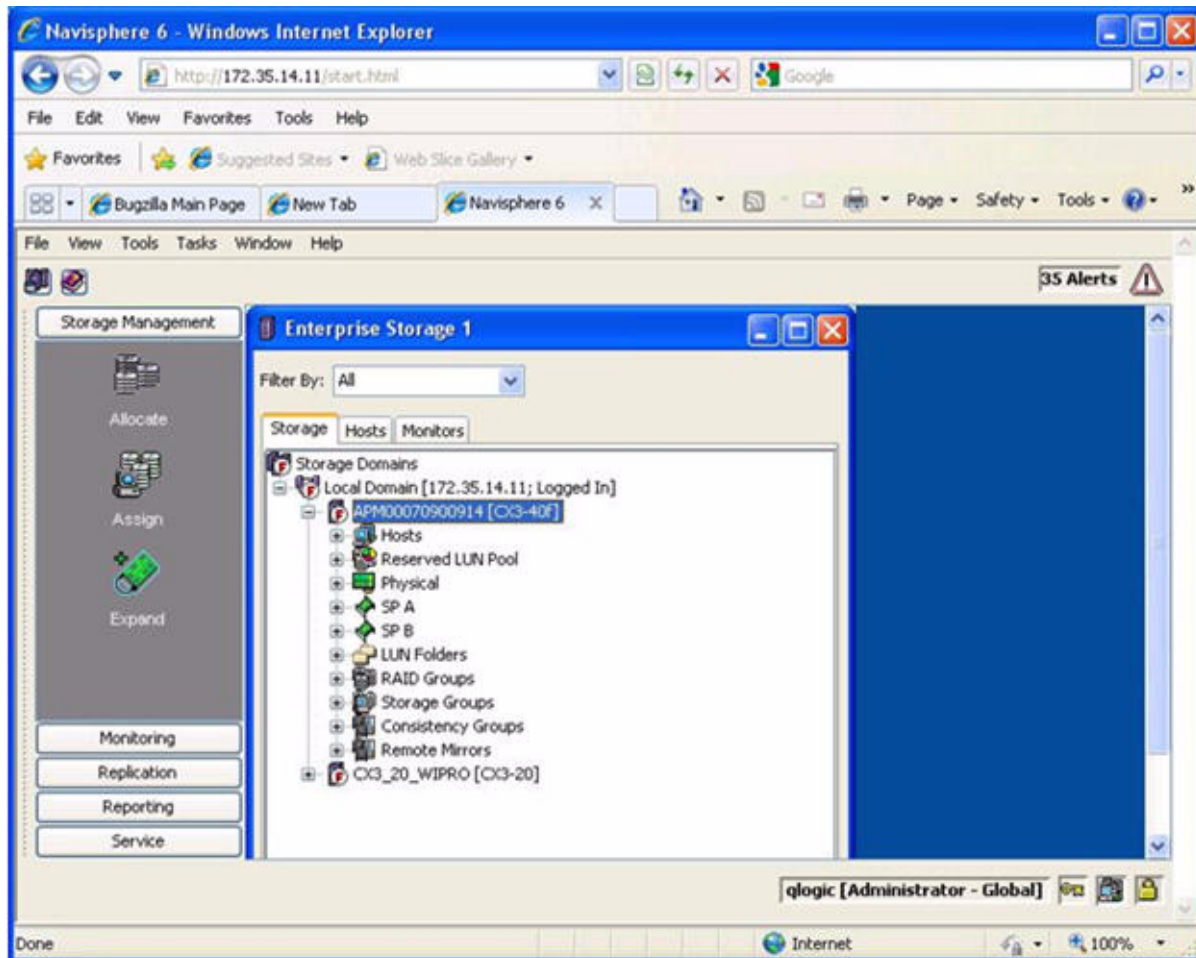
<b>Storage Vendor</b>	EMC
<b>Array Model</b>	CLARiiON CX/AX series arrays
<b>LUN Assignment Tool</b>	Navisphere

### To assign LUNs:

1. Perform zoning as follows:
  - a. Connect the Fibre Channel ports of the data migration appliance to a switch where the storage controller ports are also logged.
  - b. Using switch management tools, create a zone, **DM\_Host\_EMC**.

- c. Add the WWPN of the data migration appliance Fibre Channel ports and storage controller ports in this zone.
  - d. Save the zoning information and activate the new zoning configuration.
2. Using Internet Explorer, open the Navisphere utility using the IP assigned to the storage controller.

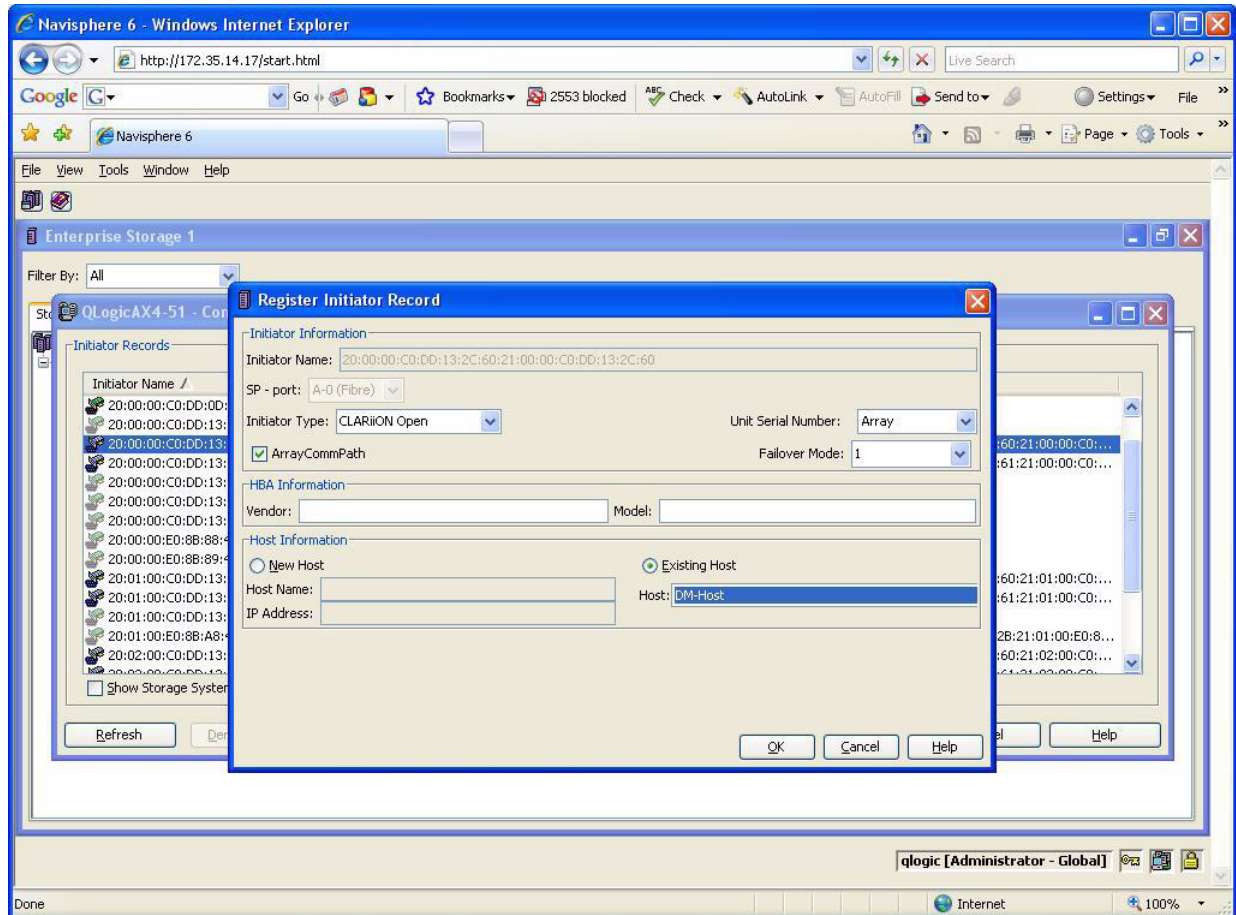
The Enterprise Storage dialog box opens, as shown in [Figure B-21](#).



**Figure B-21 Viewing Enterprise Storage**

3. Select the appropriate storage array, right-click the array name, and then click **Connectivity Status**.
4. Select the WWPN associated with the data migration appliance, and then click **Register**.

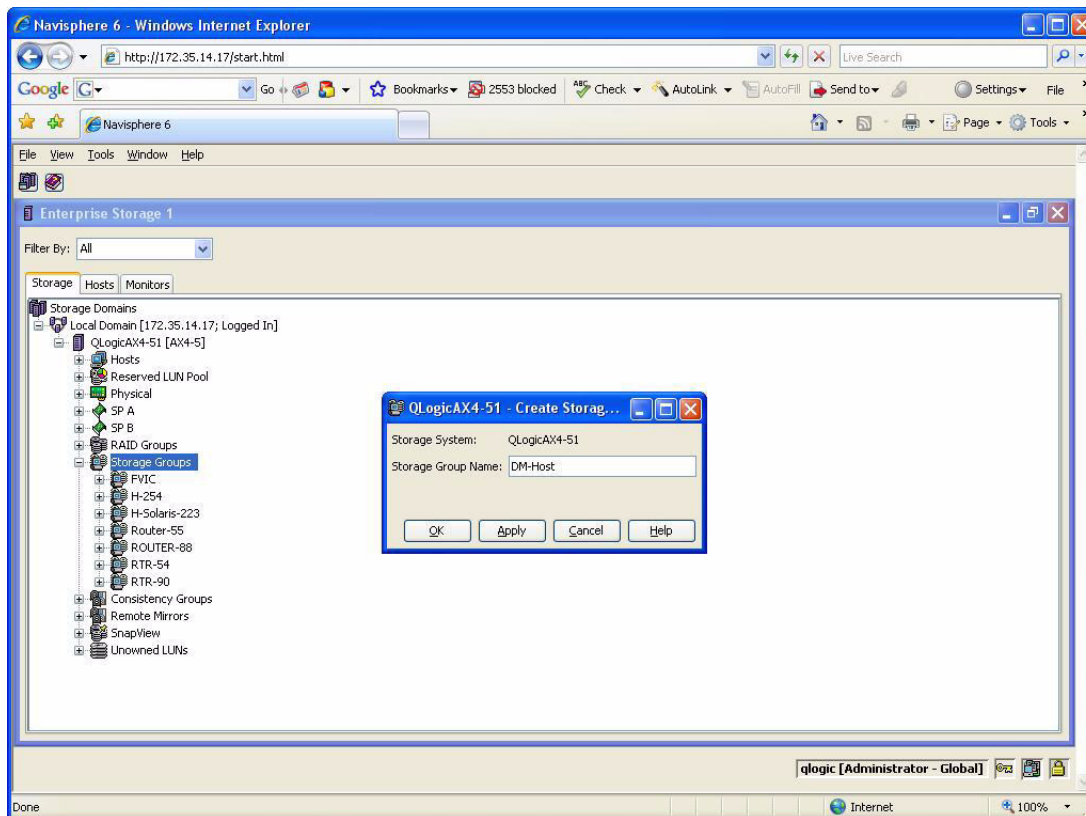
5. Complete the Register Initiator Record dialog box as follows (see [Figure B-22](#)):
  - a. In the **Initiator Type** box, click **CLARiiON Open**.
  - b. Under **Host Information**, type the values for **Host Name** and **IP Address**.
  - c. Click **OK**.



**Figure B-22 Registering Initiator Record**

6. Create a storage group to add to the newly-registered DM-Host entity as follows (see [Figure B-23](#)):
  - a. In the Enterprise Storage window, Storage page, right-click the **Storage Groups** node.
  - b. Click **Create Storage Group**.

- c. In the Create Storage Group dialog box, type **DM-Host** as the **Storage Group Name**.
- d. To save the changes, click either **OK** or **Apply**.




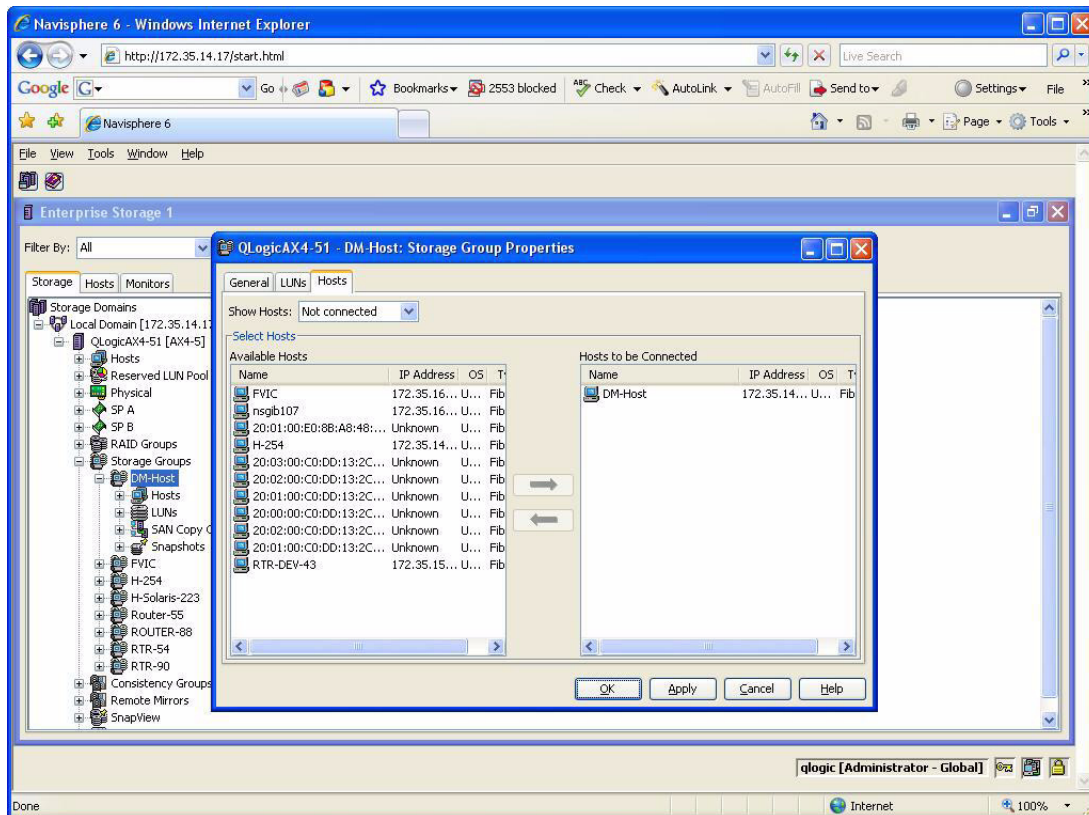
**Figure B-23 Creating Storage Group**

The new **DM-Host** storage group is listed under the **Storage Groups** tree in the main window.

7. Add the DM-Host host entity to the DM-Host storage group entity as follows (see [Figure B-24](#)):
  - a. Under the **Storage Groups** node, right-click **DM-Host**.
  - b. Click **Connect Hosts**.
  - c. In the DM-Host: Storage Group Properties dialog box, click the **Hosts** tab.
  - d. On the Hosts page under **Available Hosts**, select the **DM-Host** host entity.

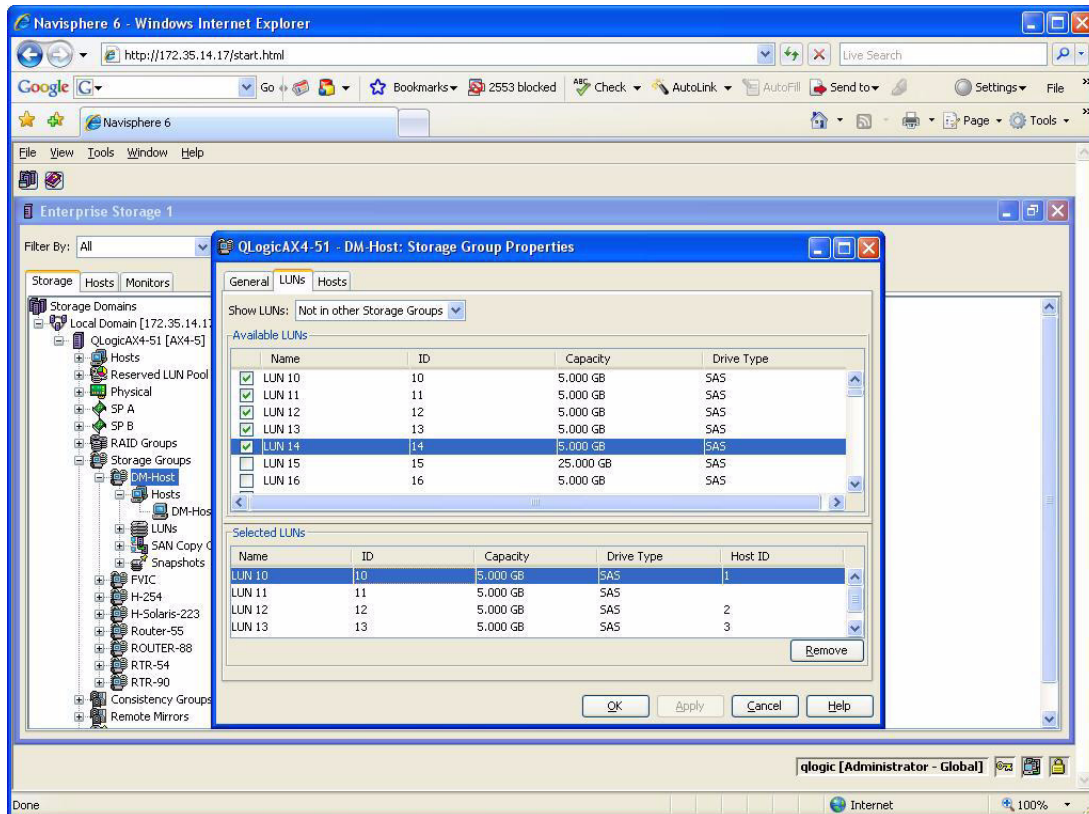


- e. Click the  (right arrow) button to move **DM-Host** to the right pane's **Host to be Connected** box.
- f. To save the changes, click either **OK** or **Apply**.



**Figure B-24 Adding DM-Host to Storage Group**

- 8. Add LUNs to the DM-Host storage group entity as follows (see [Figure B-25](#)):
  - a. Under the **Storage Groups** tree, right-click **DM-Host**.
  - b. Click **Select LUNs** to view a list of available LUNs.
  - c. In the DM-Host: Storage Group Properties dialog box, click the **LUNs** tab.
  - d. On the LUNs page, select **All** on the **Show LUNs** list to view all LUNs that have been assigned to the host and will be part of the data migration jobs.
  - e. Under **Available LUNs**, select the check box next to each LUN to be assigned for data migration jobs (as determined during the planning phase of the data migration activity).



**Figure B-25 Adding LUNs to DM-Host**

- Refresh the data migration user interface to see if the LUN assignment is reflected properly, and that the appropriate array entity appears under **FC Array**. (You may need to click the **Refresh** button several times to correctly reflect the changes.)

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## Notes



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